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The own race bias in child and adolescent witnesses: Evidence from video lineups.

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Running heading: Own race bias from video lineups

Abstract

The present study investigated the own-race bias in British school children using an eyewitness paradigm. 319 participants viewed films of two similar staged thefts, one that depicted a Caucasian culprit and the other an Asian culprit and then after a delay of 2-3 days, viewed a lineup for each culprit. 176 of the participants were Caucasian and 143 were Asian. There were also two age groups, 164 were aged 7-9 years and 152 were 12-14 years. There was a significant own race bias for the Caucasian participants from both age groups, that resulted in more correct identifications for the own race culprit from target present lineups and more false identifications for the target absent lineups. The Asian participants from both age groups showed no own race bias and performed equally accurately for culprits of both races. The measures of interracial contact were associated with correct responses for other race targets and also revealed that the majority of Caucasian participants in the current sample had very little contact with Asians, whereas the majority of Asian participants had high levels of contact with Caucasians.

Running heading: Own race bias from video lineups

Introduction

In 1983 Habib Wahir Abdal, then known as Vincent Jenkins, was convicted of raping a young white woman in nature reserve in Buffalo, New York. The woman's initial description of the assailant was a black man with a hooded jacket, even though she had been blindfolded. The victim had been informed by police that Abdal was the suspect, however, she failed to identify him initially as her assailant. After viewing a photo that was 4 years old, the victim eventually identified Abdal from a showup. Abdal served 16 years in prison until he was exonerated through DNA evidence (www.theinnocentproject.org). This is a typical example of a number of cases of mistaken identity where it has later been found that the suspect has been wrongfully convicted and in many of these cases the suspect is from a different racial group from the victim.

A fairly robust effect in the literature is the finding that people are generally better at recognising faces from their own race, as compared to other races. This bias has been referred to as the other-race effect, own-race bias (ORB), own-group bias and cross race effect. The own race bias (the term we will use here) appears to be greater in Caucasian Europeans as compared to other racial groups (Hancock & Rhodes, 2008; Jackiw, Arbuthnott, Pfeifer, Marcon, & Meissner, 2008; Walker & Hewstone, 2006). One meta-analysis by Bothwell, Brighman and Malpass (1989) examined the data from 11 face recognition studies (with 14 samples) all using Afro Caribbean and Caucasian participants. They found that both Afro Caribbean and Caucasians recognized own race faces, more accurately than other race faces. A subsequent meta-analysis by Meissner and Brighman (2001) analysed the data from 39 studies (with 91 samples). In this paper, 56 % of the sample were Caucasian, 32 % were Afro Caribbean and 12 % were Arab/Turkish, Asian and Hispanic (other ethnicities). The majority of studies included were face recognition paradigms (91%) although some studies also used simultaneous target present lineup tasks (9%). The results from the analyses revealed that participants were less likely to correctly recognise previously seen other race faces (hits), and more likely to falsely recognise other race faces that had not been seen previously (misses). The ORB was found to be not significantly different for the Caucasian and

Running heading: Own race bias from video lineups

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3 Afro Caribbean participants, however Caucasian participants showed a larger ORB as compared to the other
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6 ethnicities (Arab/Turkish, Asian and Hispanic).
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10 Although there have been numerous studies with adult participants (for a review see, Bothwell et al., 1989;
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12 Brigham, Bennet, Meissner & Mitchell, 2007; Shapiro & Penrod, 1986; Sporer, 2001), the development of the
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14 ORB and its prevalence in children's face recognition has not been subject to extensive research. Some studies
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16 have found that younger children (6-12 years) either show no ORB (Goldstein & Chance, 1980) or a reduced
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18 ORB (Chance, Turner & Goldstein, 1982) as compared to older children (13-14) or adults. Goodman et al. (2007)
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20 carried out a multination study with Caucasian children and adults in the USA, Norway and South Africa, where
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22 they were tasked with recognising Caucasian, Asian and Afro-Caribbean faces. They found that Caucasian
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24 children aged 8-10 years, 12-14 years and adults showed a significant ORB, and recognised own race faces
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26 more accurately than other race faces, however those aged 5-7 years recognised all the faces equally well.
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28 Goodman et al. (2007) suggest *"that cross-race face processing is not rigidly 'fixed' during childhood"* (p. 241)
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30 and may be more plastic for children, as compared to adults. However, her conclusions are based on research
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32 that has almost exclusively focused on Caucasian samples.
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38 The research that has examined developmental differences in processing other race faces is inconclusive. Some
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40 studies report that infants can show a preference to look at own race faces from as early as 3 months of age
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42 (Bar-Haim, Ziv, Lamy & Hodes, 2006; Kelly et al., 2007; Sangrigoli & de Schonen, 2004). Furthermore,
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44 Corenblum and Meissner (2006) found that Euro-Canadian children (aged 6-14 years) were more accurate
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46 when recognising Caucasian faces, as compared to Afro-Caribbean faces and there were no differences in
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48 performance as a function of participant age.
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54 Although there have been a number of face recognition studies investigating the cross-race effect, fewer have
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56 been conducted using the eyewitness paradigm. In their meta-analysis Meissner & Brigham (2001) found less
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Running heading: Own race bias from video lineups

3 than 10 percent had used lineups. Another finding from the meta-analysis was that individuals were not only
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5 worse at recognising faces from another race, but were more likely to falsely identify other race faces. (For
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7 review of the literature see Brigham, et al., 2007). Although this area has received little research from the
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9 eyewitness field, the Innocent Project found that of 70 % of mistaken identification cases involved cross-race
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11 identification (www.theinnocentproject.org), therefore making it a noteworthy area of research.
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16 The majority of studies that have used lineups to investigate the own race bias, have used adult witnesses. One
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18 study by Smith, Stinson and Prosser (2004) asked Caucasian participants to identify either a Caucasian or Afro-
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20 Caribbean target they had previously seen, from either a target present (TP) lineup where the culprit was
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22 present, or a target absent (TA) lineup, where the culprit was not present. They found that participants made
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24 more correct identifications for own race targets, as compared to other-race targets, and made more false
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26 identifications for other race foils, as compared to own race foils. In another study by Jackiw, et al. (2008),
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28 Caucasians and First Nation (indigenous people of Canada) participants were presented with a series of First
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30 Nation and Caucasian faces and then 12 lineups (6 TP and 6 TA). They found that all participants were
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32 significantly more accurate with their own-race, however all participants were also more likely to choose from
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34 the First Nation lineup, as compared to the Caucasian lineups, especially the Caucasian participants.
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40 In one of the few studies using child witnesses, Kask & Bull (2009) investigated identification of multiple
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42 suspects of different ethnicities. They presented Caucasian children (aged 8-10 years) and young adults (aged 16-
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44 19 years) in the UK with four target faces of different ethnicities (Caucasian, Afro-Caribbean, Latino, and
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46 Turkish). After a delay, they either saw a sequential lineup for each ethnicity (2 TP and 2 TA), or 24 faces shown
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48 sequentially and the participants either made a decision to each face, or once all the faces had been shown.
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51 Kask and Bull found that adults made more false identifications for other race faces as compared to own race
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53 faces, but there were no differences in responses for the child witnesses. In the United States, Pezek, Blandon-
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55 Gitlin and Moore (2003), presented Caucasian and Afro-Caribbean children (aged 5-6 and 8-9 years) and young
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Running heading: Own race bias from video lineups

3 adults ($M = 25$ years) a video depicting a Caucasian and an Afro-Caribbean man carrying out a cookery
4 demonstration. After a 24 hour delay the participants were presented with a TP lineup for each target.
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6 Caucasian participants were more accurate at identifying the Caucasian target and Afro-Caribbean participants
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8 were more accurate at identifying the Afro-Caribbean target. Furthermore, identification accuracy increased
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10 with age.
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17 There are a number of social and cognitive theories as to why people are better at recognising a face from their
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19 own race or group (see Sporer, 2001). One theory, the contact hypothesis, argues that through the high level of
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21 contact that individuals have with own race faces, they become experts at recognising such faces (Brigham &
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23 Malpass, 1985; Slone, Brigham & Meissner, 2000). On the other hand the comparatively lower amount of
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25 contact with other-race faces, leads them to be relatively inexpert at differentiating between other race faces
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27 (Hugenberg, Miller, & Claypool, 2007). According to the contact hypothesis, the more experience that one has
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29 with a different racial group the more accurate they should be at identifying members of that particular group
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31 (Brigham, et al., 2007). The expertise gained from contact with own race faces or other race faces may result in
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33 different processing strategies being used. It has been well established that faces are usually processed
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35 holistically or configurally (Farah, Tanaka, & Drain, 1995; Farah, Wilson, Drain, & Tanaka, 1995; Farah, Wilson,
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37 Drain, & Tanaka, 1998; Tanaka & Farah, 1993, 2003), and it has been suggested that other race faces may
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39 receive less holistic processing (Michel, Caldara & Rossion, 2006; Michel, Rossion, Han, Chung, & Caldara,
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41 2006; Rhodes, Brake, Taylor & Tan, 1989; Tanaka, Kiefer & Bukach, 2004) and poorer configural encoding
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43 (Hayward, Rhodes & Schwaninger, 2008; Rhodes, Hayward & Winkler, 2006) as compared to own race faces. In
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45 a recent study Hancock & Rhodes (2008) reported that not only did higher levels of self reported contact with
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47 other race faces reduce the own race bias, but it also reduced cross-race differences in configural coding.
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Running heading: Own race bias from video lineups

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3 The small number of studies using children tend to support the contact hypothesis and suggest that the
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5 majority race (e.g. Caucasian) shows an own race bias as a result of reduced contact with minority races,
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7 whereas the minority race shows no bias, due to contact with the majority race. One study found that
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9 Caucasian (majority race) participants (aged 7, 12 and 17 years of age) were poorer at recognising Afro-
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11 Caribbean faces than Caucasian faces, whereas Afro-Caribbean (participants showed no bias and were equally
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13 good with both race faces (Cross, Cross, & Daly, 1971). This pattern was also replicated by Feinman and
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15 Entwisel (1976) who found that African American children were better at recognising Caucasian faces, than
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17 Caucasian children were at recognising African American faces, however children who lived in a mixed race
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19 environment showed less ORB than those from segregated schools.
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28 None of the early studies investigating own race bias with children used a specific measure of interracial
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30 contact and the studies that have used contact measures have predominantly used only participants from one
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32 race. One further study by Corenblum and Meissner (2006) used a measure of interracial contact with child
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34 participants (aged 7-10 years) and a face recognition paradigm. Caucasian children (Euro Canadian) were asked
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36 to recognise African American, Native Canadian, and Euro-Canadian child faces and were also asked how much
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38 contact they had with other Native Canadian children. The results from Corenblum and Meissner's study
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40 revealed that children with lower levels of contact with Native Canadians were less likely to correctly recognise
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42 Native Canadian faces. Another study by Sporer, Trinkl and Guberova (2007) with German (majority race) and
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44 Turkish (minority race) children (aged 10-15 years) used a specific measure of interracial contact by asking the
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46 participants about levels of contact they had with people of a different race. The participants in Sporer et al
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48 (2007) study were tasked with matching faces to a 10 face array and they used response times rather than
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50 accuracy for the dependent variable. The findings reported that total amount of contact could predict the own
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52 race bias and that overall German children had quicker response times for matching German faces than Turkish
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54 faces, however Turkish children had equal response times for German and Turkish faces.
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Running heading: Own race bias from video lineups

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6 There is also evidence that interracial contact can influence the own race bias from real life situations. Studies
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8 have reported that Asian children who have been adopted by Caucasian families in Western Europe, show no
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10 own race bias (de Herring Liedekerke, Deboni & Rossion, 2010) and in some circumstances the own race bias
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12 was even reversed (Sangrigoli, Pallier, Argenti, Ventureyra & de Schonen, 2005).

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17 An alternative explanation for the own-race bias is Levin's feature selection hypothesis (1996, 2000). The
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19 feature selection model proposes that it is not differences in expertise that account for the ORB, but
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21 differences in processing styles for in-group versus out-group members. When processing in-group faces,
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23 observers typically look for features that differentiate one person from another, but when processing out-
24
25 group faces, category specific features are encoded (e.g. skin tone) rather than individuating features. Similarly
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29 Sporer's (2001) in-group/out-group model (IOM) assumes that when an individual encounters another race
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31 face, an automatic process occurs which includes deeper processing of the face during encoding. According to
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33 IOM, when another race face is encountered, less effort is allocated during encoding which could lead to
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36 shallow (or feature based) encoding of the other-race face and, individuating information is ignored (Meissner,
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38 Brigham, & Butz, 2005). It has been suggested that the in-group/out-group model can account not only for the
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40 own race bias, but other effects such as the own-age bias and effects of gender (Meissner et al., 2005).

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45 **The age of the witness can also influence identification accuracy. Children often make more false**
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47 **identifications from TA lineups as compared to adults and in some cases fewer correct identifications in TP**
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49 **lineups as compared to adults (for a review of the literature please see Havard, 2014 and for a meta-analysis**
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51 **see Fitzgerald & Price, 2015). Children's poorer performance for TA lineups may relate to the social and task**
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53 **demands (Pozzulo & Lindsay, 1997), including the assumption that the perpetrator must be within the lineup**
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55 **(Gross & Haynes, 1996). This exerts an implicit pressure to select someone, but adults appear to have a**
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Running heading: Own race bias from video lineups

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greater capacity to resist this pressure than children (Beal, Schmitt, & Dekle, 1995; Ceci, Ross, & Toglia, 1987). It has also been suggested that children view giving a positive response as being more favourable than giving a negative response (Zajac & Karageorge, 2009), and that giving an answer is preferable to not giving any answer (Waterman, Blades, & Spencer, 2000). Children may feel, therefore, that they should choose someone from the lineup instead of saying 'the person isn't there' or 'I don't know'. A few studies have reported that older children, aged 12 to 14 years, can perform like adults on target-absent lineups (Pozzulo & Lindsay, 1997; Pozzulo & Warren, 2003, Experiment 2), or more accurately than younger children (Havard, Memon, Clifford & Gabbert, 2010). However the age of which children behave like adults, especially on target absent lineups still remains an empirical question (Havard, 2017).

Of the research that has been described thus far, no studies have investigated the own race bias with children using an eyewitness paradigm and also measures of interracial contact. Moreover, few studies have used more than one racial group as participants. In the current experiment the aim is to investigate the own-race bias with Caucasian and Asian child witnesses in the UK and ascertain whether measures of interracial contact can predict other race identification from a video lineup. Our first hypothesis is that the Caucasian participants (the majority race) will exhibit an own-race bias and make more correct identifications for their own race target for the target present (TP) lineups. Additionally, the ORB may be present in the TA lineups and Caucasian participants will make more false identifications for other race target as compared to the own race target. Our second hypothesis is that Asian participants (who are the minority race) should be equally accurate at identifying the Asian and Caucasian targets from the target present lineups, and also show no own-race bias on the target absent lineups. Thirdly, if interracial contact influences the own race bias then a measure of interracial contact should be predictive of the own race bias, and participants with higher levels of interracial contact should be more accurate with other race targets. As a subsidiary hypothesis we predict that

Running heading: Own race bias from video lineups

adolescents may make fewer false identifications for TA lineups as compared to our younger age group, as reported by previous research with video lineups (Havard, et al., 2010.)

Method*Participants*

A total of 319 children were recruited from state run primary and secondary schools. 176 Caucasian pupils were from the Aberdeenshire area and the 143 Asian pupils were from the East Midlands, UK. These locations were chosen as Aberdeenshire has a predominantly Caucasian population, whereas the East Midlands has a more ethnically diverse population. According the Aberdeenshire Council school roll 2009 (P. Argo, personal communication, August, 2010) 94.7 percent of pupils were Caucasian and 0.51 % were Asian; 0.11 % Indian, 0.1 % Pakistani, 0.06 % Bangladeshi and 0.24% other Asian. According to Leicester City Council estimates, approximately 60% of the population is Caucasian, 31 % is Asian; 28% Indian, 2% Pakistani, 1% Bangladeshi (Roberts-Thomson, 2009).

There were two age groups 7-9 years ($M = 8.1$ years, 100 females and 64 males) and 12-14 years ($M = 13.01$ years, 107 females and 48 males). These age groups were selected because previous research found the older age group were more accurate in performance on the video target absent lineups, as compared to the younger age group (Havard et al., 2010). Additionally we wanted to test whether the own race bias was greater for the older age group, as compared to the younger age group as has been previously reported (Goodman et al., 2007). Consent to carry out the research was obtained from both the head teachers and legal guardians.

Materials

Two short films were created, one starred a male Caucasian (Target) actor (26 years of age) and the other was a male Pakistani (Asian target) actor (24 years of age). The films were identical except for the targets. Each film

Running heading: Own race bias from video lineups

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3 began with the target walking along a corridor towards the camera and trying several handles on the doors,
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6 until one opened. The next scene is of the target entering the door of an office and looking around picking up a
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8 wallet from the table, then a lap top from another desk. The target then looks through several drawers and
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10 also picks up a mobile phone. The target takes one final look around the room before leaving. The last scene is
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12 of the target walking back up the corridor with the lap top bag over his shoulder¹. The total time for each film
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14 was 1 minute and 30 seconds. Both targets were seen in full face frontal and profile views throughout the film.
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19 Four 9-person video lineups were created, half target present (TP) and half target absent (TA) according to
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21 VIPER² specifications for each actor. The targets (actors) were filmed at a VIPER suite at a local police station in
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23 order that the lineup met the standard specific content. The lineups were created by an experienced VIPER
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25 operator, in the same manner as a real identification parade would be made and foils were chosen in the same
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27 manner as Valentine, Darling & Memon (2007). The same foils were used for the TP and TA lineups, except the
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29 designated target replacement foil that was used in the TA lineups. To control for factors that might affect
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31 identification accuracy, the images in the lineups including the targets were rated by 28 individuals who did not
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33 take part in the study. There were two groups of raters; 14 Caucasians aged from 21 to 57 age (mean = 30.7
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35 years) and 14 Asians aged from 20 to 39 (mean = 28.7 years). Each face was rated on a 1-7 scale for
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37 distinctiveness, i.e. *"if you had to pick this person out of a crowd at a railway station, how easy would it be?"*. A
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39 **mixed factor ANOVA 2 (Face ethnicity: Asian vs Caucasian) x 2 (Face type: Target vs Foil) were within subject**
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41 **factors and 2 (Rater ethnicity Asian vs Caucasian) was the between subject factor conducted on the mean**
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43 **ratings. The results found no significant main effects or significant interactions (all ps > .05).**
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Running heading: Own race bias from video lineups

3 The positions of both the designated target replacement foil (TA lineup) and target were manipulated so that
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5 for half the lineups they appeared at position 4, hereafter referred to as Lineup A and for half position 6,
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7 hereafter referred to as Lineup B. This manipulation was to try and detect any bias to choosing early or late in
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9 the sequence. Each lineup member appeared as a standard VIPER film. In other words there was a 15 second
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11 video clip of the person looking straight to the camera and then turning their head to the right and then to the
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13 left. All the VIPER files contained the head and shoulders and were filmed under the same lighting conditions
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15 against a grey background. Once the film has been made it was sent to the VIPER headquarters for quality
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17 control purposes before being approved (for more details about the quality control processes see Havard and
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19 Memon, 2009).
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Design

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31 The study employed a split plot design; 2 (Target: Caucasian vs. Asian) x 2 (Lineup type: TP vs. TA) were within-
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33 group factors, and 2 (Witness: Caucasian vs. Asian) x 2 (Witness Age: 7-9 yrs vs. 12-14 yrs) were between
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35 subject factors. Each participants saw one TP and one TA lineup that were counterbalanced so that they could
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37 appear first or second and could either be the Caucasian or the Asian target. Subsequent analyses found no
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39 significant effects of order of film or lineup for identification responses.
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45 The dependent variables were the lineup identification decisions. For the TP lineups there were three possible
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47 responses; a correct identification (hit), a foil identification (false positive), or an incorrect rejection (miss). For
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49 the TA lineups responses were either a correct rejection, or a false identification. Data for TP and TA lineups
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51 were analysed separately, additional dependent measures was the sum of responses from the contact
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53 questionnaire.
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Running heading: Own race bias from video lineups

Procedure

Initially, groups of children viewed two videos and again, these were counterbalanced and could therefore see the Caucasian or Asian target first. They were told that the makers of the film wanted to get some feedback and would come back to the school to ask some questions, for example, '*what do you think will happen next in the story?*'.

In the second phase two to three days later, children were tested individually and carried out the identification task. They were shown one lineup first and told that either the White man or the Asian man "*may or may not be present*". Then in accordance to the Police & Criminal Evidence Act (PACE: 1984) in England and Wales and the Lord Advocates Guidelines in Scotland (2007) they were shown the lineup twice and told that they could pause the video at any time and they could go back and see any picture again. After the second viewing the participants were asked if they wanted to view any part of the lineup again. They were then asked if they had seen the White man (or Asian man) from the film. If they identified a person they were shown the lineup member and asked "*is this the person you saw?*" Immediately after making an identification decision, the witness was shown the second lineup following the same procedure. Finally, participants were asked five questions about intergroup contact based on the questionnaire by Corenblum and Meissner (2006). The questions were:

Do you have any Asian (or White) pupils at your school? If yes, how many

Do you have any Asian (or White) people who live near you? If yes, how many

Do you ever work/play with Asian (or White) people in school? If yes, how many

Do you ever work/play with Asian (or White) people outside school? If yes, how many

How many Asian (White) people do you know?

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6 Following Corenblum and Meissner (2006), the scores for each question were calculated on a 5-point scale, 1=
7 never to 5 = more than 5. Finally the total score for each participant was calculated by summing all the scores
8 for all questions.
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11 Results

12 Data for the target present and target absent lineups were analysed separately as eyewitness research (e.g.,
13 Wells, 1993) and face recognition (e.g., Megreya & Burton, 2007) showed consistently that performance on TP
14 and TA conditions is unrelated. Furthermore, responses are different for each lineup.
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17 *Target present lineups*

18 Overall for the TP lineups 38.9 % of participants correctly identified a target (correct ID), 36.7 % incorrectly
19 chose a foil from the lineup (foil ID) and 24.4 % incorrectly rejected the lineup saying the target was not
20 present. Table 1 shows the percentage of responses for both Caucasian and Asian witnesses for the Caucasian
21 and Asian targets. A hierarchical loglinear analysis (HILOG) was conducted with witness ethnicity (Caucasian,
22 Asian), witness age (child, adolescent), target ethnicity (Caucasian, Asian) and response (correct ID, foil ID and
23 incorrect rejection) as factors. The likelihood ratio of the model was $\chi^2(12) = 12.24, p = .43$, there was a
24 significant interaction for witness ethnicity, target ethnicity and response ($\chi^2(2, N = 319) = 9.27, p = .01$). The
25 data were split and separate χ^2 tests for target ethnicity and response were carried out for the Caucasian and
26 Asian witnesses. For Caucasian witnesses there was a significant effect of target ethnicity ($\chi^2(2, N = 176) =$
27 29.62, $p < .001, \Phi = .41$), there were more correct identifications for the Caucasian target (59 %) as compared
28 to the Asian target (20.5%), and there were more foil identifications for the Asian target (60.2 %) as compared
29 to the Caucasian target (25 %). For the Asian witnesses there were no significant effects ($\chi^2(2, N = 143) = .65, p$
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Running heading: Own race bias from video lineups

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3 = .72, $\Phi = .07$), and responses were not significantly different for the Caucasian (41.2%) or Asian (34.6 %)
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6 targets.

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10 As an additional measure the responses for lineup A (target position 4) and lineup B (target position 6) were
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12 also analysed to determine whether there was any influence of the target's position in the lineup on
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14 identification. This was found to be non-significant ($\chi^2 (2, N = 319) = 3.2, p = .2$)
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23 24 *Target Absent Lineups*

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26 For the TA lineups 44.2 % of participants correctly stated the target was not present (correct rejection) and
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28 55.8 % chose a member from the lineup (false ID). Table 2 shows the percentage of participants' responses for
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30 both age groups for the Caucasian and Asian targets. A hierarchical loglinear analysis (HILOG) was conducted
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32 with witness ethnicity (Caucasian, Asian), witness age (child, adolescent), target ethnicity (Caucasian, Asian)
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34 and response (correct rejection, false ID) as factors. The likelihood ratio of the model was ($\chi^2 (6, N = 319) =$
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36 2.66, $p = .85$), there was a significant interaction for witness ethnicity, target ethnicity and response ($\chi^2 (1, N =$
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38 319) = 4.69, $p = .03$), and also for witness age and response ($\chi^2 (1, N = 319) = 12.28, p < .001$).
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44
45 To explore the interaction for witness ethnicity, target ethnicity and response, the data were split and separate
46
47 χ^2 tests for target ethnicity and response were carried out for the Caucasian and Asian witnesses. For Caucasian
48
49 witnesses there was a significant effect of target ethnicity ($\chi^2 (1, N = 176) = 8.53, p = .004, \Phi = .2$), there were
50
51 more correct rejections for the Caucasian target (51 %) as compared to the Asian target (29.5 %), and there
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53 were more false identifications for the Asian target (70.5 %) as compared to the Caucasian target (48.9 %). For
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Running heading: Own race bias from video lineups

3 the Asian witnesses there were no significant effects ($\chi^2 (1, N = 143) = .06, p = .81, \Phi = .02$), and responses
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 5 were not significantly different for the Caucasian (48.2 %) or Asian target (49.8 %).
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 10 The effect of witness age upon response, was also statistically significant ($\chi^2 (1, N = 319) = 12.21, p < .001, \Phi =$
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 13 .2). Adolescent witnesses made more correct rejections (54.2 %) as compared to the child witnesses (34.8 %)
 14
 15 and children made more false identifications (65.2 %) as compared to adolescent witnesses (45.8 %).
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 20 The responses for TA lineups A and B were also analysed to determine whether there was any in differences in
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 22 identification, according to lineup order. This was found to be non-significant ($\chi^2 (2, N = 319) = .02, p = .89$).
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27 PLEASE INSERT TABLE 3 ABOUT HERE.
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31 *Choosers vs. non-choosers*

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 33 The data for the target-present and target-absent line-ups were collapsed to investigate overall choosing
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 35 behaviour, the responses are shown in Table 3. A hierarchical loglinear analysis (HILOG) was conducted with
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 37 witness ethnicity (Caucasian, Asian), witness age (child, adolescent) and choosing response (did not choose,
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 39 chose on one lineup, chose on both lineups) as factors. The likelihood ratio of the model was ($\chi^2 (3, N = 319) =$
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 41 3.57, $p = .31$), there was a significant interaction for witness ethnicity and choosing ($\chi^2 (2, N = 319) = 8.52, p =$
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 43 .014), and also for witness age and choosing ($\chi^2 (2, N = 319) = 17.26, p < .001$). A χ^2 test for witness ethnicity
 44
 45 and choosing was found to be significant ($\chi^2 (2, N = 319) = 8.46, p = .015, \Phi = .16$), Caucasian witnesses were
 46
 47 more likely to choose on both lineups (48.9 %) as compared to Asian witnesses (33.6 %) and Asian witnesses
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 49 were more likely to not choose on either lineup (14.7 %) as compared to Caucasian witnesses (8.5 %). An χ^2 test
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 51 for witness age and choosing was found to be significant ($\chi^2 (2, N = 319) = 17.04, p < .001, \Phi = .23$), the
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 53 younger age group were more likely to choose on both lineups (53 %) as compared to the older age group (30.3
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Running heading: Own race bias from video lineups

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(%), whereas the older age group were more likely to choose on one lineup (56.8 %) as compared to the younger age group (37.2 %).

PLEASE INSERT TABLE 4 HERE

Inter-racial Contact

Following Corenblum and Meissner (2006) a measure of inter-racial contact was calculated for each witness from the sum of the responses from the inter-racial questionnaire, they are shown in table 4. The χ^2 test for total contact and witness ethnicity was found to be significant ($\chi^2 (4, N = 319) = 205.54, p < .001, \Phi = .8$). Caucasian witnesses were significantly more likely to not know any Asians (75 %), whereas very few Asians knew no Caucasians (2 %). The majority of Asian children knew 5 or more Caucasians (90.8 %), whereas very few Caucasian children knew 5 or more Asians (12.5 %). In line with predictions, there was a significant correlation between the sum of the responses from the interracial contact questionnaire and correct identification of other race faces for target present lineups ($r (155) = .21, p = 0.008$). There was also a significant correlation for levels of contact and correct rejections for the target absent lineups ($r (153) = .18, p = 0.031$)

PLEASE INSERT TABLE 5 HERE

Discussion

The aim of this study was to investigate the own-race bias using an eyewitness paradigm, with Caucasian and Asian children and adolescents and to examine the effects of contact on own race bias. Our first prediction for the target present lineups was that as Caucasian participants are the majority race in the UK, they would exhibit

Running heading: Own race bias from video lineups

3 an own race bias and make more correct identifications for their own race, as compared to the other race
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6 target. This was found to be the case, Caucasian participants were significantly more accurate at correctly
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8 identifying the Caucasian target (59%) as compared to the Asian target (20.5%). For the target absent lineups we
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10 predicted that the Caucasian participants would be more likely to falsely identify the Asian target as compared
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12 to the Caucasian target. This prediction was also confirmed, as Caucasian participants were significantly more
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14 likely to falsely identify a member from the Asian lineup (70 %) as compared to someone from the Caucasian
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16 lineup (48.2 %).
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22 The own race bias shown here for the Caucasian participants confirms previous face recognition research that
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24 reports that people are better at recognising their own race, as compared to other races and that this effect is
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26 greater in Caucasian Europeans as compared to other racial groups (Hancock & Rhodes, 2008; Jackiw et al.,
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28 2008; Walker & Hewstone, 2006). Our findings also confirm those from previous eyewitness studies that have
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30 found that participants make more correct identifications for own race targets from target present lineups and
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32 more false identifications of other race lineup members from target absent lineups (Smith et al., 2004; Jackiw et
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34 al., 2008).
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40 Our second prediction was that as Asian participants are the minority race, they would exhibit no own race bias
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42 and be equally good at identifying both races. This hypothesis was supported , Asian participants were equally
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44 accurate at identifying the Asian target (34.6%) and the Caucasian target (41 %) in target present lineups.
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46 Furthermore for the target absent lineups, Asian participants also showed no own race bias, and had similar
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48 false identification rates for the Asian (50.3%) and Caucasian (51.8 %) lineups. The finding that our Asian
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50 participants showed no own race bias confirms previous research that has found that minority races do not
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52 show an own race bias and recognise faces from another race equally to own race faces, if the faces are from
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54 the majority race (Corenblum & Meissner, 2006; Cross et al., 1971, Feinman & Entwisle, 1976; Sporer et al.,
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Running heading: Own race bias from video lineups

2007). According to Sporer et al (2007) the findings that our Asian participants do not exhibit an ORB like our Caucasian participants, is due to asymmetric social interactions. That is, our minority members are likely to have more contact with majority members, than majority members have with persons in the minority group. This was confirmed by our measures of interracial contact.

Our third prediction was that measures of interracial contact might predict responses for identifying other race targets. We found a significant correlation between the level of interracial contact and correct identification of the other race target. Furthermore, the Asians participants had high levels of contact with Caucasians, whereas our Caucasian participants had low levels of contact with Asians. These findings appear to support the contact hypothesis which suggests that that through high levels of contact with one's own race we become experts (Brigham & Malpass, 1985; Slone, Brigham & Meissner, 2000), however having high levels of contact with other races can eradicate the own race bias (de Herring et al., 2010). We additionally found that higher levels of contact could help to reduce false identifications for TA lineups, and this is an area that warrants further research.

However, not all research has found asymmetric patterns for the ORB. One study with children by Pezdek et al., (2003) found an own race bias for both Caucasian and Afro-American participants. This study used similar experimental stimuli to our study using a film of a staged event, although both targets (Caucasian and Afro-American) were presented at the same time and not one at a time as in our study. Pezdek and colleagues lineup also used a 6-person video lineup for their identification phase, however in contrast to our own lineups, each member walked into the room and stood facing the camera, rather than the head and shoulders video used in the present study. The participants in Pezdek et al. study also responded on a scale of 1 (*absolutely sure this was not the target man*) to 5 (*absolutely sure this was the target man*), rather than identifying a number from the lineup. Pezdek and colleagues found an own race bias for both the Caucasian and Afro-American participants,

Running heading: Own race bias from video lineups

3 with both groups more accurate at identifying their own race face. This could be due to experimental
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5 differences or due to different rates of interracial contact for the participants. Unfortunately, Pezdek and
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7 colleagues did not include measures of interracial contact, so we cannot determine whether differences in inter-
8
9 racial contact are driving the effects.
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15 Following previous research we examined whether video lineups may be beneficial at reducing false
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17 identifications from target absent lineups for the adolescent group. It was found that adolescents (54.2%)
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19 made significantly more correct rejections as compared to the children (34.8%). This replicates previous
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21 research that reports video lineups can reduce false identifications for target absent lineups as compared to
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23 static lineups for adolescent participants, but not for children (Harvard et al., 2010). It maybe that seeing a
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25 moving image allows a witness to view multiple angles of the face and this information is better utilised by
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27 adolescents than children. Alternatively, Valentine et al. (2007) suggest that the additional information
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29 provided in the video may reveal distinctive features of a face that the witness does not remember, and this
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31 may lead to a decision that the face is not that of the culprit. All of this evidence points to the use of using
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33 video images for lineup identification, over static images.
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40 As an additional measure we examined choosing rates, as these may reflect a tendency or bias to pick from a
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42 lineup regardless of memory quality. Caucasian participants were more likely to choose on both lineups (48.9 %)
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44 as compared to Asian participants (33.6%), whilst Asians (14.7%) were more likely to not to choose on either
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46 lineup as compared to the Caucasians (8.5%). This seems to show that Caucasians were less conservative in their
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48 responses and more likely to pick a person from the lineup, whereas Asian participants appeared to be more
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50 cautious and less likely to choose someone from the lineups. Younger participants were also more likely to
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52 choose from both lineups (53 %) as compared to the older participants (30.3%). This confirms previous research
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Running heading: Own race bias from video lineups

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3 that has shown that younger children (aged 6-8 years) are more likely to choose from lineups, as compared to
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6 adults (Havard, Memon, Laybourn & Cunningham, 2011).
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10 Although our results report some differences in accuracy for target absent lineups and also differences in
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13 choosing rates as a function of age, there were no differences in own race bias as a function of age. This
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15 confirms previous research that has found that there were no developmental differences in recognising faces
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17 from different races (Corenblum & Meissner, 2006; Pezdek et al., 2003), however it also contrasts with research
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19 that has shown that younger children can sometimes recognise faces of another race equally with own race
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21 faces (Chance et al., 1982; Goldstein & Chance, 1980; Goodman et al., 2007). The studies that have found no
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23 own race bias for younger children have employed face recognition paradigms, as opposed to an eyewitness
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25 paradigm. These studies also do not report any interracial contacts measures that could be influencing the
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27 accuracy for other race faces.
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33 There is a limitation of this study that should be considered, that the lineups for both races were constructed by
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36 a Caucasian policeman and a Caucasian researcher. Although there is research which has shown that video
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38 lineups show no difference in the fairness as a function of the ethnic origin of the lineup members (Valentine,
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40 Harris, Colom Piera, & Darling, 2003) some other laboratory studies suggest, the own-race bias can influence the
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42 construction of the lineup. Brigham and Ready (1985) tasked a group of Afro-Caribbean and Caucasians to select
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44 5 foils that were similar in appearance to a target photo, a task similar to that when constructing a lineup. They
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46 found that both groups went through more photos when looking for own-race matches than when looking to
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48 match the foils to the other-race target. They also used a stricter criterion for similarity for the own race photos.
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52 Several other studies have found that race can influence the fairness of lineups (Brigham, Ready & Spier, 1990;
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54 Lindsay, Ross, Smith & Flanigan, 1999) and Brigham et al. (2007) suggest that lineups should be constructed by
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56 operators who are the own race as the suspect, to increase fairness and remove any bias. **A further limitation**
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3 is the use of a single target for the Asian and the Caucasian perpetrator, which could limit the generalisability
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6 of findings (Wells & Windschitl, 1999). Additionally, when using only one target and lineup for each group it
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8 could be argued that one lineup might be easier than another which could influence responses. Future
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10 research should ensure that there are several targets for each experimental category to prevent any target
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12 effects.

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17 To conclude, the findings from the present study suggest contact may be a mechanism underlying own race
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19 bias. Caucasian participants who had low levels of contact with Asians showed a significant own-race bias,
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21 whereas Asians who had high levels of contact with Caucasians showed no own race bias. The level of interracial
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23 contact was positively correlated with correct identification for the other race target for TP lineups and correct
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25 rejections for the other race target for TA lineups. Future research investigating the own-race bias should
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29 examine further how quality of contact with other races together with other factors such as length of exposure
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31 to the face may influence accuracy. Furthermore, for real criminal investigations levels of interracial contact
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33 should be considered when suspect is a different race to the witness.
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Running heading: Own race bias from video lineups

Notes

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1. In this study only one target face for each race was used. In face recognition research participants would be presented with a number of faces for each race and a large number of faces where they have to decide which ones are 'old' and which ones are 'new'. However, in the eyewitness paradigm the aim is to simulate the situation of a witness viewing one (or two) suspect(s) and then trying to identify them later from a lineup. A few others studies using the eyewitness paradigm to examine the own race bias have also used only one target face per race (Brigham et al., 1985; Kask & Bull, 2009; Pezdek et al., 2003).

2. VIPER video identification procedure electronic recording, is one of the most commonly used methods for lineup identification in the UK.

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For Peer Review

Running heading: Own race bias from video lineups

Table 1. Mean ratings for the target and foils for the Caucasian and Asian raters

Rater	Faces	<i>M</i>	<i>SD</i>
Caucasian	Caucasian Target	3.71	1.59
Asian		4.50	1.45
Total		4.11	1.55
Caucasian	Caucasian Target	3.86	1.460
Asian		3.57	1.51
Total		3.71	1.46
Caucasian	Caucasian Foils	4.00	.88
Asian		3.79	.98
Total		3.89	.92
Caucasian	Asian Foils	4.14	.66
Asian		3.79	1.19
Total		3.96	.96

Running heading: Own race bias from video lineups

Table 2. The percentage of responses for the target present lineups (frequencies are in parentheses)

Witness	Caucasian target			Asian target		
	Correct ID	Foil ID	Incorrect rejection	Correct ID	Foil ID	Incorrect rejection
Caucasian						
7-9 years	60.9 (28)	23.9 (11)	15.2 (7)	17.4 (8)	73.9 (34)	8.7 (4)
12-14 years	57.1 (24)	26.2 (11)	16.7 (7)	23.8 (10)	45.2 (19)	16.7 (7)
*Total	59 (52)	25.1 (22)	16 (14)	20.6 (18)	59.6 (53)	12.7 (11)
Asian						
7-9 years	42.4 (14)	24.2 (8)	33.3 (11)	35.9 (14)	35.9 (14)	28.2 (11)
12-14 years	40 (14)	31.4 (11)	28.6 (10)	33.3 (12)	25 (9)	41.7 (15)
Total	41.2 (28)	27.8 (19)	31 (21)	34.6 (26)	30.5 (23)	35 (26)

* NB Totals have been rounded up so might add up to more than 100 percent.

Running heading: Own race bias from video lineups

Table 3. The percentage of responses for the target absent lineups (frequencies are in parentheses)

Witness	Caucasian target		Asian target	
	Correct rejection	False ID	Correct rejection	False ID
Caucasian				
7-9 years	37 (17)	63 (29)	19.6 (9)	80.4 (37)
12-14 years	66.7 (28)	33.3 (14)	40.5 (17)	59.5 (25)
Total	51.9 (45)	48.2 (43)	39.9 (26)	70 (62)
Asian				
7-9 years	43.6 (17)	56.4 (22)	42.4 (14)	57.6 (19)
12-14 years	52.8 (19)	47.2 (17)	57.1 (20)	42.9 (15)
Total	48.2 (36)	51.8 (39)	49.8 (34)	50.3 (34)

Running heading: Own race bias from video lineups

Table 4. The percentage of choosing for both lineups (frequencies are in parentheses)

Witness	Did not choose	Chose on one lineup,	Chose on both lineups
Caucasian			
7-9 years	4.3 (4)	34.8 (32)	60.9 (56)
12-14 years	13.1 (11)	51.2 (43)	35.7 (30)
Total	8.7 (15)	43 (76)	48.3 (86)
Asian			
7-9 years	16.7 % (12)	40.3 % (29)	43.1 % (31)
12-14 years	12.7 % (9)	63.4 % (45)	23.9 % (13)
Total	14.7 (21)	51.9 (74)	33.5 (44)

Running heading: Own race bias from video lineups

Table 5. The percentage of responses for the inter-racial contact questionnaire (frequencies in parentheses).

Witness	Total number of other race persons known				
	None	1 or 2	3	4	5 or more
Caucasian	75. (132)	5.1 (9)	2.8 (5)	4.5 (8)	12.5 (22)
Asian	2.1 (3)	.7 (1)	3.5 (5)	2.8 (4)	90.8 (129)

For Peer Review